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The use of Algerian honey on cutaneous wound healing: a case report and review of the literature

Baghdad Khiati¹, Salima Bacha^{1,2}, Saad Aissat^{1,2}, Moussa Ahmed^{1,2*==}¹*Institute of Veterinary Sciences, Ibn Khaldoun University, Tiaret, Algeria*²*Pharmacognosy & Api-Phytotherapy Research Laboratory, Mostaganem University, Algeria*

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ABSTRACT

Honey is a traditional remedy, which has a broad range of effects on the wound healing process. This case study is to evaluate the effect of topical application of Algerian honey on cutaneous wound healing in the horse. The wound was first cleaned with saline, and then the honey ointment was applied gently to the wound, using a glove. After 4 days' post-trauma, the honey treatment was started. After 15 days, the wound was further reduced, and treated only once a day. This is the first case to report the use of Algerian honey in wound healing especially in horse.

1. Introduction

Wounds in horses, particularly leg wounds, have long healing periods. Honey is commonly utilized to dress wounds, for instance in burn wounds and other infected wounds[1]. Honey has been reported to promote wound healing through several mechanisms[2]. There are three potential mechanisms resulting in this outcome. Saccharides at the wound surface may encourage the production of hyaluronic acid from glucose, which

simultaneously suppresses the formation of fiber-forming collagens. Glucose at the wound bed creates an environment that enables wound healing proteoglycans to exert their effects without producing excessive quantities of collagens and the mechanism by which sugar attaches to collagen may change its structure[3]. Also, honey has many potentially useful properties, including a broad spectrum antimicrobial activity, anti-inflammatory actions and stimulation of new tissue growth[4]. Wounds are very common in horses, and many excellent commercial honey treatments, topical and internal, are available. This study was therefore designed to investigate the beneficial effects of Algerian honey in healing of heavily traumatized and contaminated wounds in equines.

*Corresponding author: Dr. Ahmed Moussa, Institute of Veterinary Sciences, Ibn Khaldoun University, Tiaret, Algeria.

Tel: +213 65234059

Fax: +213 46425001

E-mail: moussa7014@yahoo.fr

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2. Case report

Two-year-old mare received a traumatic wound of the posterior triangular pectoral muscle after running into an iron gate. After wound debridement, conventional medical treatment consisting of broad-spectrum antibiotics in combination with non-steroidal anti-inflammatory drugs, there was no improvement in the wound.

Natural *Euphorbia* honey was used throughout this study. This honey is a local monofloral honey produced by *Apis mellifera* bees from the flora source of *Euphorbia*.

This honey was chosen as treatment in this case. The wound was first cleaned with saline, and then the honey ointment was applied gently to the wound, using a glove. The wound was not covered by a secondary dressing. For the first week, the wound was treated one to two times a day (Figures 1 and 2).



Figures 1 and 2. 21-04-13. Wound directly after the accident wound presenting with dry, dead or devitalised tissue could be described as necrotic. The wound was usually heavily contaminated.

3. Discussion

Equine wounds, particularly those involving the distal portion of the limbs, often undergo prolonged complex healing and may enter a non-healing state with obvious financial and welfare implications[5]. Honey has beneficial actions in wound healing also *in vivo* and licensed honey products are widely used in wound care. A variety of case reports provide amazing data supporting the use of sugar in treating infected wounds. Many reports have been published about the usefulness of honey in wound management[6,7]. A report presented at the 2011 American Association of Equine Practitioners conference supported the effectiveness of honey in lower-leg wounds in horses. Brander[8], concluded from a series of case studies that not all the expected beneficial effects of using honey for wound treatment are realized in clinical practice. In our case, after 15 d, the necrotic tissue could be manually removed, the malodour was gone and the infection was reduced. The wounds decreased with 90% and showed good granulation and epithelisation. After two weeks' treatment, the horse became more active, this caused the delicate new tissue (Figures 3 and 4).



Figure 3. 03-06-13. After 8 d, the wound began to contract rapidly; the wound bed was clean, filled with healthy granulation and the wound margins were beginning to reduce in size.



Figure 4. 09–06–13. After use of *Euphorbia* Honey, improved granulation bed across the entire wound showed. Epithelialisation and contraction progressed well.

The application of *Euphorbia* honey, after debridement, resulted in relieving edema and inflammation around the wound, remarkable decrease of exudation from the wound, disappearance of infection and observable decrease of wound surface after one week and significant reduction in wound size after 2 weeks' treatment. A veterinary case report also demonstrated the antibacterial and healing properties of honey in treating severe burns[9]. This study supports the previous findings of the use of the honey in wound healing where they studied use of the Manuka honey and Manuka honey gel in horses[10]. In conclusion, this report clearly supports the use of natural honey in wound healing especially in horses. To our knowledge, this is also the first report on healing effect of Algerian honey.

Conflict of interest statement

The authors declare no conflict of interest

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References

- [1] Jull AB, Walker N, Deshpande S. Honey as a topical treatment for wounds. *Cochrane Database Syst Rev* 2013; doi: 10.1002/14651858.CD005083.pub3.
- [2] Tonks AJ, Cooper RA, Jones KP, Blair S, Parton J, Tonks A. Honey stimulates inflammatory cytokine production from monocytes. *Cytokine* 2003; **21**: 242–247.
- [3] Langemo DK, Darlene H. Use of honey for wound healing. *Adv Skin & Wound Cr* 2009; **22**(3): 113–118.
- [4] Kingsley A. The use of honey on the treatment of infected wounds: case studies. *Br J Nurs* 2001; **10**(22 Suppl): S13–S16, S18, S20.
- [5] Carnwath R, Graham EM, Reynolds K, Pollock PJ. The antimicrobial activity of honey against common equine wound bacterial isolates. *Vet J* 2013; doi.org/10.1016/j.tvjl.2013.07.003.
- [6] Bang LM, Bunting C, Molan P. The effect on dilution on the rate of hydrogen peroxide production in honey and its implication for wound healing. *J Altern Complement Med* 2003; **9**: 267–273.
- [7] Mohammadi AA, Seyed Jafari SM, Kiasat M, Pakyari MR, Ahrari I. Efficacy of debridement and wound cleansing with 2% hydrogen peroxide on graft take in the chronic-colonized burn wounds; a randomized controlled clinical trial. *Burns* 2013; **39**(6): 1131–1136.
- [8] Brander A. Equine acute wound healing with honey. *Poster presentation at: The International Equine Congress for Veterinarians*. 22–23 January 2011, Brussels. [Internet] Available from: http://www.l-mesitrans.com/sites/l-mesitrans.com/files/Poster_hippos_2011_internet.pdf. [Accessed on 2nd Aug 2013]
- [9] Mathews KA, Binnington AG. Wound management using honey. *Compendium* 2002; **24**(1): 53–60.
- [10] Bischofberger AS, Dart CM, Perkins NR, Kelly A, Jeffcott L, Dart AJ. The effect of short- and long-term treatment with manuka honey on second intention healing of contaminated and noncontaminated wounds on the distal aspect of the forelimbs in horses. *Vet Surg* 2013; **42**(2): 154–160.